(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1602 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. II) EVEN THEORY EXAMINATION 2012-13

COMPUTER CONCEPTS AND PROGRAMMING IN C

Time : 3 Hours *Total Marks : 100*

Note :– (1) This paper is in **three** Sections. Section A carries 20 marks, Section B carries 30 marks and Section C carries 50 marks.

(2) Attempt **all** questions. Marks are indicated against each question/part.

(3) Make suitable assumptions, if necessary.

SECTION–A

1. You are required to answer **all** the parts of this question : **(2×10=20)**

(a) Define CPU. Explain its major components.

(b) What do you mean by application software ? Give any two examples.

(c) What is an operating system ? List the various types of operating systems.

(d) Write purpose and syntax of at least two iterative statements in C.

(e) What do you mean by algorithm ? Discuss characteristics of an algorithm.

(f) What is secondary memory ? Give any two examples.

(g) Differentiate between calloc ( ) and malloc ( ) function in C.

(h) Give any four format specifiers used in printf( ) function.

(i) How plotter is different from printer ?

(j) Write any two library functions used for manipulation of strings.

SECTION–B

2. Attempt any **three** parts of the following : **(10×3=30)**

(a) Write a program in C to generate the Fibonacci series up to the last Fibonacci number less than 100. Also find the sum of all Fibonacci numbers and the total count of the Fibonacci numbers.

(b) What do you mean by sorting ? Explain. Also give a flow chart and an algorithm to sort the given sequence of integers.

(c) Two matrices of real numbers of size 4 × 4 is given. Write the functions *sum_matrix()* and *multiply_matrix()* for displaying the addition and multiplication of the given matrices in C language.

(d) Convert the following :

(i) $(1110101.101)_2 = (...)_{10}$

(ii) $(5454.11)_6 = (...)_{10}$

(iii) $(CD1B)_{16} = (...)_8$

(iv) $(254.5)_{10} = (...)_2$

(e) Write short notes on the following :

(i) Operator precedence in C programming language and its significance.

(ii) Various types of programming languages and their characteristics.

SECTION–C

3. Attempt any **two** parts of the following : **(5×2=10)**

(a) Explain call by value and call by reference mechanism for function call using proper example.

(b) Write a short note on top-down and bottom-up approach with some example.

(c) Write a function in C language to find the GCD of two numbers.

4. Attempt any **two** parts of the following : **(5×2=10)**

(a) Write a function in C which returns the absolute value of a given number and also print whether the number is even or odd.

(b) Write a short note on modular programming with suitable example.

(c) Write a function in C language to calculate the multiplication of all the digits of a 5-digit integer number.

5. Attempt any **two** parts of the following : **(5×2=10)**

(a) What do you understand by pointer arithmetic ? Explain. What are the advantages and disadvantages of using pointer variables ? Explain.

(b) Explain various bit wise operators in C language. Discuss the utility of bit wise operators with some example.

(c) Define stack. Implement the push( ) and pop( ) functions for stack in C programming language.

6. Attempt any **two** parts of the following : **(5×2=10)**

(a) Write short note on step wise refinement with suitable example.

(b) Create a suitable structure in C language for keeping the records of the employees of an organization about their Code, Name, Designation, Salary, Department, City of posting. Also write a program in C to enter the records of 200 employees and display the names of those who earn greater than Rs. 50,000. (Make suitable assumptions for data types).

(c) The marks of the N students in a given subject (Minimum mark 0 and Maximum mark 100) is awarded. Write a program in C language to store these marks in an array and calculate the average mark obtained by all the students and then display the deviation of mark for each student from average.

7. Write short notes on any **two** of the following with proper example : **(5×2=10)**

(a) Macros in C language

(b) Linked list

(c) Mathematical functions in C.